

## REVISITING THE ROLE OF THE FORM AND FUNCTION OF ANCIENT TOOLS (BASED ON MATERIALS FROM THE SITE ARUCHLO I, GEORGIA)

Revisitando el papel de la forma y la función de útiles antiguos a partir de los materiales procedentes del yacimiento Aruchlo I (Georgia)

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**ABSTRACT** Traceological analysis was conducted on stone material of ancient settlement Aruchlo I located on eastern Georgia in the Kvemo Kartli region. These researches showed that typological-morphological characteristics of various categories of tools do not always correspond with their function. For example, the form and function of scrapers completely coincided only for 18 pieces from the whole assemblage of 39 tools. By contrast, the others had different functions or were composite tools. The group of scrapers included not only tools used for skin treatment, but also tools with other functions: Microanalysis allows us to identify a specific treated material, the manner of its treatment, and sometimes also a type of a resulting artefact. Neglect of such evidences leads to an incomplete material analysis, which, unfortunately, can be viewed in the researches of new materials from recent excavations of the site Aruchlo.

**Key words:** Georgia, Neolithic, Obsidian Tools, Scraper, Experimental and Traceological Analysis, Form and Function.

**RESUMEN** Se realizó el análisis traceológico al material lítico del antiguo asentamiento Aruchlo I ubicado en el este de Georgia, en la región de Kvemo Kartli. Estas investigaciones mostraron que las características tipo-morfológicas de varias clases de útiles no siempre se corresponden con su función. Por ejemplo, la forma y la función de los raspadores coincidieron completamente solo en 18 piezas de todo el conjunto de 39 útiles. Por el contrario, los otros tenían funciones diferentes o eran utensilios compuestos. El grupo de raspadores incluye no solo útiles empleados para el tratamiento de la piel, sino también instrumentos con otras funciones: el microanálisis nos permite identificar un material específico tratado, la forma de su tratamiento y, a veces, también un tipo de artefacto resultante. La falta de atención a tales evidencias conduce a un análisis incompleto del material, que, lamentablemente, se puede ver en las investigaciones de nuevos materiales de las excavaciones recientes del yacimiento Aruchlo.

**Palabras clave:** Georgia, Neolítico, Útiles de obsidiana, Raspadores, Análisis experimental y traceológico, Forma y función.

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## INTRODUCTION

Regional differences were revealed in the 1960s by investigation of the settlements attributed to early agricultural culture found in the Caucasus. It was supposed to be one of the most ancient centers of the origin of a productive economy. Some of these sites are located on the territory of eastern Georgia in the Kvemo Kartli region. Archaeological materials from the sites were investigated rather well, radiocarbon dates were also made. They were gathered into one group according to cultural characteristics, and were attributed to Shulaveri-Shomu tepe culture, dated to the VI-IV mill BC (Chubinishvili, 1971; Kushnareva and Chubinishvili, 1970). Ancient settlements Aruchlo I-IV, located on manmade hills near the village Aruchlo, occupy a special place (fig. 1).

Archaeological material of the site (especially Aruchlo I) is diverse and includes household and domestic constructions, semi-subterranean dwellings, ditches, numerous ceramic vessels, bone and antler artefacts. Stone industry is comparatively rich and includes cores, scrapers, burins, borers, and numerous knife-like blades made from flint and obsidian. There are also stone axes, chisels, anvils with a depression in the centre, strangled fluted hammers, oval and round grinding stones, rubbing stones, pestles and mortars (Kushnareva and Chubinishvili, 1970).



Fig. 1.—The scheme of early agricultural settlements in the Kvemo Kartli region, Eastern Georgia.

## TRACEOLOGICAL ANALYSIS

Traceological analysis based on the microscopic study of the use traces left on the tools' working edges (Semenov, 1957, 1968; Semenov and Korobkova, 1983; Korobkova, 1987) was conducted along with traditional archaeological methods of investigation (Chelidze, 1979) during the research of industries from Aruchlo. These researches showed that typological-morphological characteristics of various categories of tools do not always correspond with their function. This observation could significantly change the role of different activities involved in production while modelling the structure of ancient economy; for example, a broad functional diversity of various tools made from the fragments of blades can be observed: meat knives, saws, scrapers for wood, plane knives for wood and bone treatment etc. (Korobkova and Esakiya, 1984; Esakiya, 1984). Also it was determined that a range of tools was used for various functions. 229 implements from 1339 of the site Aruchlo I appeared to be composite tools (Esakiya, 1984).

Modern works on different sites, including Aruchlo I, showed that many conclusions were made basing on typological characteristics. A very well represented typological group from the industry of Aruchlo I – obsidian end-scrapers – will be studied here in order to show a fallacy of such an approach. They were made from the fragments of medium blades (width up to 1,5 cm) and medium flakes (3–2,5×1,5–2 cm). It must be noted that there are numerous traces of both ancient and recent damages (besides preserved use traces) left on obsidian tools, caused by materials' characteristics: these often complicate the determination of their function. However, careful analysis of working surfaces, along with experimental practice, could help correctly determine their function.

## FORM AND FUNCTION

Despite typological homogeneity of scrapers, their function appeared to be more diverse. The form and function completely coincided only for 18 pieces from the whole assemblage of 39 tools from the collection of excavation of the site Aruchlo I conducted in 1983. By contrast, the others had different functions or were composite tools (fig. 2).

Scrapers (18 pieces), used for skin treatment, have well-defined use-wear traces, represented by a roundish margin of a working edge, clear linear features, a line of a bright lustre located both on a working part, and on adjoining parts (fig. 2:3; fig. 3:3). The degree of use-wear, compared to experimental tools (fig. 2:1; fig. 3:1), testify to a long-term use; moreover, some of the tools were operated in a reciprocating action, whereas others – either backwards or forwards. Clear traces of fastening in the handle could be identified on the backs of two tools.

Two scrapers on blades were used for skin treatment (fig. 2:10), and their lateral sides served as knife inserts for skin cutting (fig. 2:10). Edge micro damage, thin

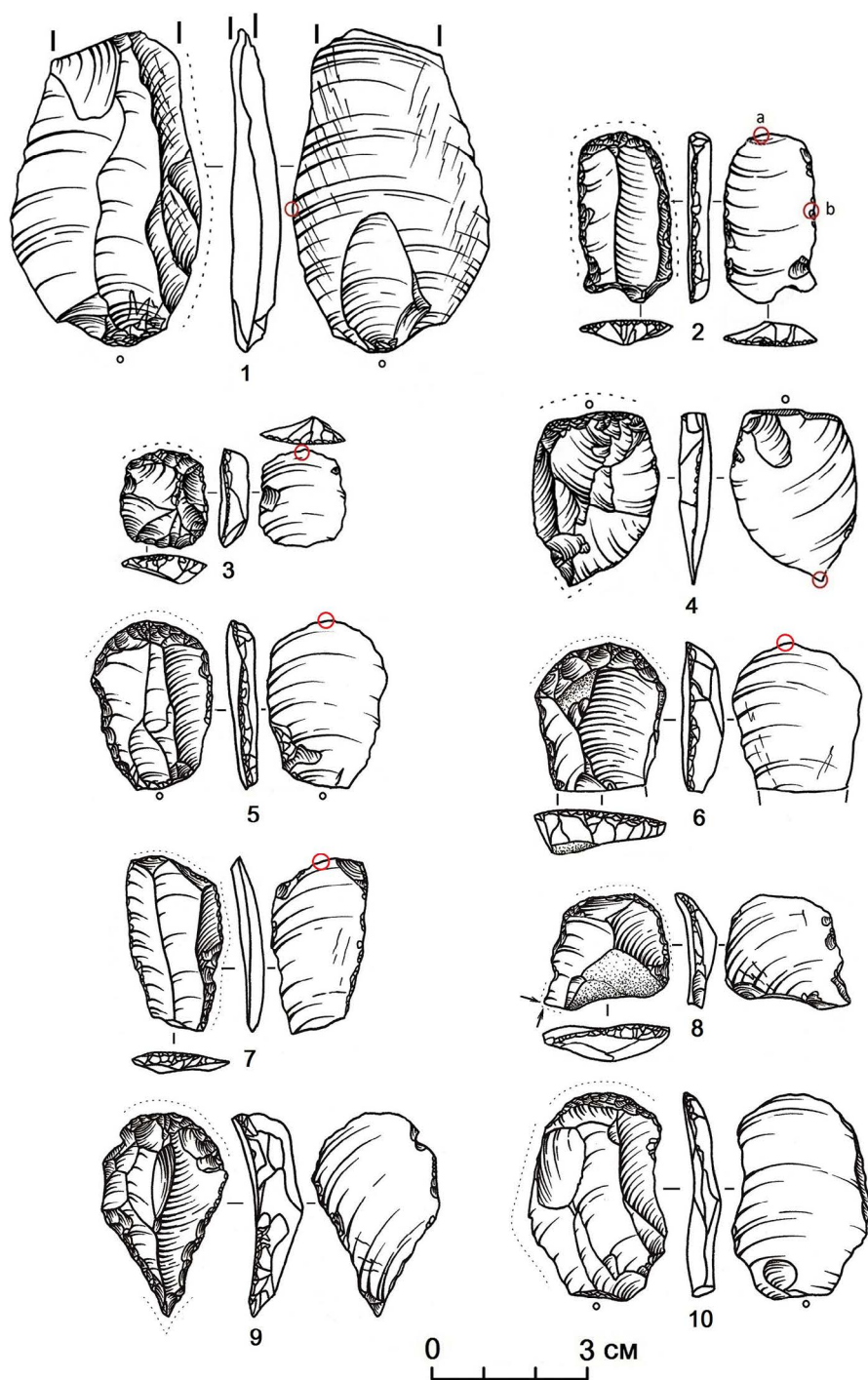


Fig. 2.—Scrapers from the site Aruchlo I.

linear scratches, located at an angle to the working edge, and a thin polished line alongside are typical use-wear traces for the latter function of the tool.

Two scrapers, apart from scraping of skin, have traces of use on the specially narrowed-up part of the back as an awl on soft material, probably skin (figs. 2:4,9; fig. 3:4). Their points have the roundness of the edges, parallel linear traces are located along the long axis of the tool, an insignificant shine on the tip of the point.

Eight tools were used as a scraper for wood treatment, four pieces are end-tools made on the fragments of blades: (fig. 2:7; fig. 3:7), and the others were made from flakes (fig. 2:5,6). Working edge of the first group included both end retouched edges, and untreated lateral sides with a use retouch appeared further on. Sections with linear features typical for scrapers were traced on retouched working edges of the flake tools. Deformation of a marginal working edge allows us to suppose that they were used for dry wood treatment: tools moved from itself (fig. 2:5,6; fig. 3:5,6) and backwardly forward, so the linear traces are multidirectional (intersect each other) (fig. 2:7; fig. 3:7). Polish is bright, smooth and can be described as slightly rounded. Traces of fastening in the handle could be identified on the backs of some of the heavy scrapers.

One tool was used as a scraper for wood treatment (fig. 2:8), and afterwards when it was broken, its back was transformed into a burin used for wood treatment. The traces of utilization are slight. The inner surface of facets has an insignificant shine.

Four other scrapers on blades were used only as knife inserts for meat processing, a specially retouched scraper working edge does not bear any use-wear traces. The linear traces are sufficiently numerous to provide a clear directional pattern indicating the use-action. Polish on these tools is bright to fairly bright, with only slight surface smoothing and located on both sides.

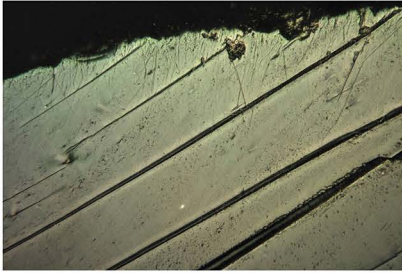
One of the studied tools on the blade's fragment was used consequently in two functions – its scraper part and one of the lateral sides were served as scraper for wood treatment, another lateral side served as a sickle's insert (fig. 2:2; fig. 3:2a,b). The scraper for wood has the typical characteristics of this tool: deformation of the working edge, linear traces are preserved only on the protruding sections of the deformed edge, linear traces are deep located on the ventral surface because it moved front (from itself). The linear traces on sickle's insert are comet-tailed, polish is bright and the edge is roundish.

Two tools did not bear any use-wear traces, the function of one tool could not be determined because of insignificant use-wear traces or a severe strain, that damaged the major part of the cutting edge.

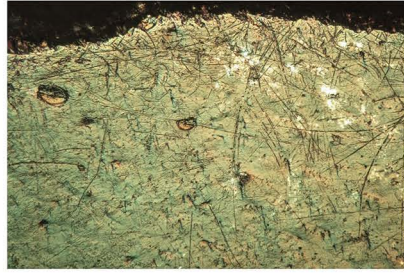
## CONCLUSION

Thus, the group of scrapers morphologically well defined from the site Aruchlo I, analyzed with experimental and traceological approach, included not only tools used for skin treatment: scrapers, scraper-burin, scrapers-knives, but also tools with other functions: scrapers and a scraper-burin, knife inserts for meat processing, sickle insert.

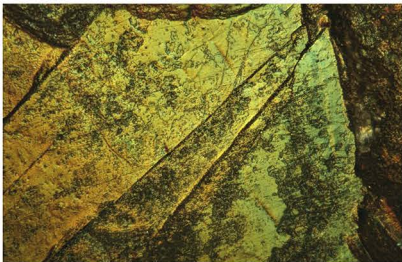




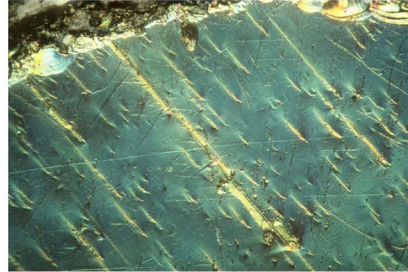
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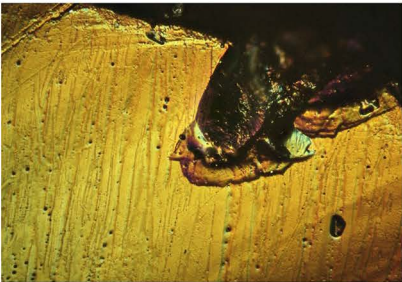
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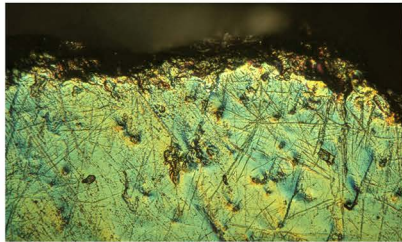
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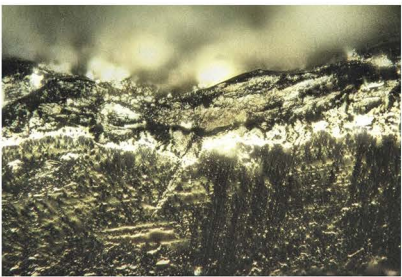
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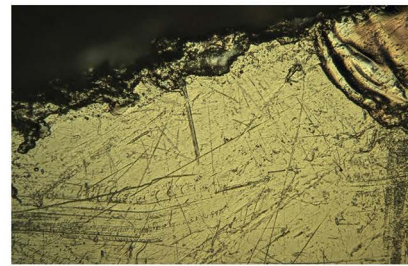
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Fig. 3.—Microphoto of use-wear traces left on the tools from the site Aruchlo I: 1) an experimental scraper for skin ( $\times 200$ ); 2a) scraper for a wood ( $\times 200$ ); 2b) insert of a sickle ( $\times 200$ ); 3) scraper for skin ( $\times 200$ ); 4) awl for skin ( $\times 200$ ); 5-8) a scraper for a wood ( $\times 200$ ); 9) a scraper for skin ( $\times 200$ ).

This data confirms a very common mismatch of morphological forms of tools and their function suggested by numerous researches. Microanalysis allows us to identify a specific treated material, the manner of its treatment, and sometimes also a type of a resulting artefact. Neglect of such evidences leads to an incomplete material analysis, which, unfortunately, can be viewed in the researches of new materials from recent excavations of the site Aruchlo. An increase of archaeological artefacts' number without thorough analysis has been recognized (Chikovani *et al.*, 2015). In view of this, it is important to highlight once again the importance of a complex study of industry conducted in order to solve questions concerning peculiarities of the development of the ancient economical systems.

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